

# **PRESCRIBED FIRE MONITORING REPORT**

## **George Washington Carver National Monument**

Prepared by Brittany Cole  
29 September 2010

### **Burn Unit Summary**

Burning of the southern burn units was planned for September 22, 2010. Weather conditions were not optimal pre burn. Relative Humidity at 1100 was 62 percent with South/ SouthWest winds and a dry temperature of 83 degrees Farenheit. Briefing for the Wednesday burns occurred at 1230.

Engine 301 from the Buffalo River Module had initial mechanical problems that were dealt with promptly to put the engine back in service. A test fire was lit at the NW corner of unit 4 at 1345. Conditions were deemed adequate and firing continued through planned units. Primary ignition was with an ATV torch in addition to hand torch firing. Burning extended 1-5 meters into the woodland before self extinguishing. Wet lines were layed down along park boundary lines of units 6 and 3 to reduce risk to neighboring private agricultural fields. A black line was created to protect the integrity of the historical Carver Family Cemetery within burn unit 4. Grassland areas burned well and much smoke was produced as grasses were green. The burn was completed by 1800 leaving a mosaic burn pattern across the units.

An After Action Review was conducted near the visitor center. Mier thanked everyone for their cooperation. Curtis Gregory was appreciative of efforts as a burn was much desired. Topics discussed included general operations, the septic pump, and traffic control. The burning of the septic pump was an oversight and it was agreed in subsequent burns to take greater precautions. Traffic control communications ran smoothly providing for the safety of passing vehicles.

### **Burn Unit Measurements**

Date: 22 September 2010

Unit: 3, 4, 5, and 6

Size: Planned= 84.4 acres, Actual = 70.9 acres

Vegetation type: Fuel Model 3 with interspersed deciduous woody species comprised of Fuel Models 8/9 (hardwood leaf litter) and mowed or hayed areas consisting of Fuel Model gr3 (low load, very course, humid climate grass)

Personnel: Personnel from OZAR, BUFF, HTLN, and MDC participated.

Burn Boss: Aaron Mier

Information Officer: Dena Matteson

Holding Boss: Fenn Wemberly

Holding Crew: Gregory, Ralls, James ?  
 Ignition Crew: Matteson, Barron, Ellis  
 Ignition Specialist: Tim Stanton  
 Holding Crew: Bloodworth, Tim F, Shelby, Cole  
 Ignition Crew: Shannon ?, Hampton  
 Patrol: GWCA maintenance and ranger staff conducted traffic control and helped with equipment maintenance.

## **Objectives**

### Resource Objectives:

Encourage growth of native species by 5-10%.  
 Control and diminish exotic species by 5-10%.

### Prescribed Fire Objectives:

Reduce dead and down fuels (1 & 10 hour fuels) by 20-50%.  
 Reduce dead and down fuels (100 & 1000 hour fuels) by 1-5%.

### Tolerable Deviation of Objectives:

Treat (blacken) 75-95% of individual burn units.  
 A mosaic of fire intensity and severity is acceptable and desirable.

## **Prescription**

Variables	Hot	Desired	Cool
Temperature	100	70	20
Relative Humidity (%)	18	30	75
Wind direction	any	Southwest	any
Wind Speed (midflame, mph)	8	4	0
Rate of spread (ch/hr) model 3	291	82.8	28.1
Rate of spread (ch/hr) model 8	5.1	1.3	0.5
Flame length (ft) model 3	22.2	11.8	6.5
Flame length (ft) model 8	1.8	0.9	0.6
1-hr fuel moisture (%)	3	7	12
10-hr fuel moisture (%)	6	8	15
Probability of ignition	89	59	25

## **Fuel Moisture**

Standing fuels and litter had a greater than desired level of moisture in them. Because prescriptions are typically based on dead fuel moisture, the values for litter are most appropriate for comparison. Measured litter moisture was greater than the cool parameter of the prescription.

Burn Unit	N	Mean 1-hr moisture (litter) (% $\pm$ stdev)	Mean 1-hr moisture (standing) (% $\pm$ stdev)
3	1	38.4	88.2
4	1	34.2	97.8
5	2	32.1 (0.7)	134.7 (23.4)
park	3	34.2 (3.0)	113.8 (27.8)

\*Three samples were collected for each monitoring site.

10-hr fuel moisture sticks measured 3.2%. However, the RAWS station at Mount Vernon recorded 10-12 % that day. Given the high humidity it is possible that the Mount Vernon station was more accurate.

## **Fuel Load**

Burn Unit	N	Ton/acre	Stdev (ton/acre)
3	1	3.1	
4	1	2.5	
5	2	2.6	1.06
Park	3	2.7	0.7

## **Weather Observations**

*22September2010*

Weather observations were within prescription and relate best to the cool parameters.

		Temperature				Prob. of Ign*		Wind**	
Time	Location	Dry	Wet	DP	RH	FDFM	PIG	Dir.	Speed (mph)
1330		89	72	64	44	7	50%	S	0-2
1430		89	72	44	44	7	50%	S	0
1530		89	73	66	47	9	40%	S	0
1630		87	73	67	51	9	40%	S	3

Prob of Ign. = FDFM (fine dry fuel moisture), PIG (probability of ignition): values are for shaded only).

\*\*Wind direction, wind speed in mph.

### **Fire Severity**

Fire severity measurements indicated the vegetation (standing plants) and substrate (horizontal fuels i.e., litter, duff, and soil scorching) were lightly burned.

Burn Unit	N	Mean severity class Vegetation ( $\pm$ stdev)	Mean severity class Substrate ( $\pm$ stdev)
3	1	2.7	3.1
4	1	2.9	3.0
5	2	3.1 (1.3)	2.3 (1.2)
Park mean	3	2.9 (0.2)	2.8 (0.4)

Severity classes: 0 = NA, 1 = heavy, 2 = moderate, 3= light, 4 = scorched, 5 = unburned

### **Soil Moisture**

Soil moisture values are based on percent volumetric water content (VWC). 50% is considered saturated.

Burn Unit	N	% VWC ( $\pm$ stdev)
3	1	24.8
4	1	21.2
5	2	25.9 (1.5)
Park mean	3	24.0 (2.4)

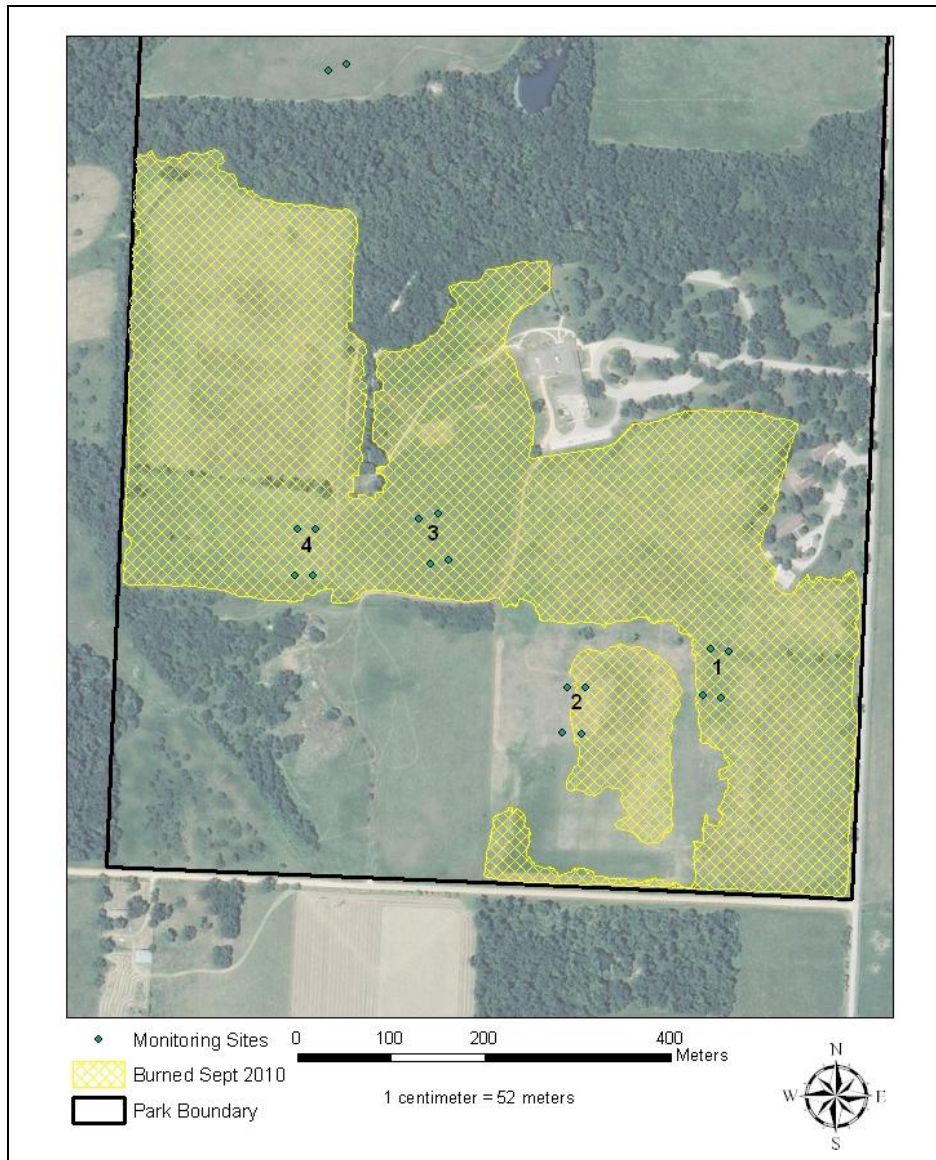


Figure 1. Map of area that was burned. Burned area boundaries determined by GPS unit.



## Selected Pre- and Post -burn Photographs



GWCA\_01 (burn unit 5) pre-burn



GWCA\_01 (burn unit 5) post-burn



GWCA\_04 (burn unit 3) pre-burn.



GWCA\_04 (burn unit 3) post-burn.



## Burn-day Photos

